

UNIVERSITY OF CENTRAL OKLAHOMA

NATURAL HISTORY MUSEUM

(UCONHM)



DEPARTMENT OF
Biology
UNIVERSITY OF
CENTRAL OKLAHOMA

AVIAN SPECIMEN PRESERVATION & PREPARATION POLICIES & GUIDELINES

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Chris Butler

Managing a Collection of Vertebrates in a Museum

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SOP # 1 Adding a Specimen to Museum

1. All round skins, flat skins and skeletons (those that have been processed through the bugs) shall be stored under a hood or ventilated area to allow the specimen to completely dry. Specimens that are not dry may attract contaminants into the museum and jeopardize the integrity of the museum and the other specimens.
2. After specimen is completely dry, remove from hood and place in a sealed plastic bag.
3. Place bag in Ultra Cold Freezer (<-40°C). Specimen should remain here for at least 72 hours.
4. Remove from Freezer and let specimen thaw to room temperature. It is best to let it thaw inside the museum as to not re-expose the specimen to contaminants.
5. After thawing, catalog specimen (see accompanying procedures) and place specimen in the museum according to Curator's specifications.

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SOP # 2 Specimen Preparation

1. Be sure to allow ample time for specimen to warm to room temperature.
 - a. For frozen specimen that is smaller than Picidae.
 - i. Remove from freezer and place in refrigerator.
 - ii. Allow ≥ 24 hours for specimen to fully thaw before preparing.
 - b. For frozen specimen that is larger than Columbidae.
 - i. Remove from freezer and place in refrigerator.
 - ii. Allow ≥ 48 hours for specimen to fully thaw before preparing.
 - c. For frozen specimen that is larger than Buteos.
 - i. Remove from freezer and place in refrigerator.
 - ii. Allow ≥ 72 hours for specimen to fully thaw before preparing.
2. Preparing the specimen
 - a. Round skin
 - i. See attached protocol.
 - ii. After specimen is completed. Place under hood or into other ventilated area to allow skin to desiccate.
 1. For specimen that is smaller than Picidae allocate at least 1-2 weeks to dry.
 2. For frozen specimen that is larger than Columbidae allocate at least 1 month to dry.
 3. For frozen specimen that is larger than Buteos allocate at least 6 weeks.
 - b. Flat skin (detached wing and tail)
 - i. See attached protocol
 - ii. After specimen is completed. Place under hood or into other ventilated area to allow skin to desiccate.
 1. For specimen that is smaller than Picidae allocate at least 1-2 weeks to dry.
 2. For frozen specimen that is larger than Columbidae allocate at least 1 month to dry.
 3. For frozen specimen that is larger than Buteos allocate at least 6 weeks.
 - c. Skeleton
 - i. Begin by removing every feather from the specimen. Feathers around the legs, ear flats, and eye can be problematic, but it is necessary to remove every feather.
 - ii. After all feathers (including down) are removed, extract both eyes.
 - iii. Cut open the abdominal cavity and remove the internal organs.
 1. Sex of the bird can be determined at this stage if this information is so desired by Museum Curators.
 2. If organs in the thoracic cavity cannot be reached without cutting through the ribs, leave them in the specimen.

- iv. Remove as much of the pectoralis major as possible without destroying the skeleton to expedite the process.
 - v. All these items must be removed as Dermestid/ Hide Beetles (*Dermestes maculates*) will not eat them.
 - vi. After the skeleton comes back from the bugs (which can take anywhere from 4 weeks to 4 months), make sure all edible tissue is removed from the skeleton. Now place in a box or sealed plastic bag and place in Ultra Cold Freezer (<-40°C) and let it sit for 72 hours.
- d. Tissue Preservation
- i. Take samples from the individual specimen's heart, liver, muscle, and kidney.
 - ii. Place heart or part of heart in labeled 2 µL micro centrifuge tube.
 - 1. Label should include or be cross referenced to, but not limited to, the following information: organ, date, species and collector.
 - iii. Repeat this step for every organ taken.
 - iv. Store the tissue samples in an Ultra Cold Freezer (<-40°C) for future genetic testing.

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SOP # 3 Storing Donated/Submitted Specimens

1. Place specimen along with its locality information, collector, date collected and any other pertinent information in an air-tight plastic bag or trash bag.
 - a. Locality should include as much information as possible (latitude/longitude, street intersections, distance from major streets not stores or restaurants, town, state, and country)
2. Storage
 - a. For short term storage (specimen will be prepared within 48 hours), place specimen in a refrigerator (2°C to 8°C).
 - b. For long term storage, place specimen in a freezer (-15°C to -25°C).

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SOP # 4 Recording data for the Specimens

The most important part of a specimen that is not the specimen itself is the info regarding the specimen. While preparing a specimen for placement in the museum, a tag was made with pertinent information regarding when and where the specimen was collected and by whom. The tag should also include who prepared the specimen for the museum, when it was prepared, and the museum catalog number.

Since this information is vital to the collection, it should be recorded in no less than three ways. The primary format will be the tag on the specimen. The second format should be a hard copy of the catalog. The third should be a digital format, whether it is a spreadsheet or a database. It is important to have these two extra formats because the writing on tags can fade, just as it can in a catalog, and databases, servers, and hard-drives can crash or fail. With the information in multiple places, it can be easier to retrieve information that is not available in one of the other formats. For the University of Central Oklahoma, a database program called Specify will be used for the Museum of Natural History.

The tag should have already been made for the specimen, so we will start with the second format for recording data. It is your choice regarding the order in which you record this information; however, it is suggested that you enter the information into both formats as soon as possible. If possible, do both at the same time to help ensure consistency.

1. Hard Copy Catalog

A hard copy of the catalog is extremely important for organization in a museum. It should contain a list of all the specimens in the museum and should be listed in numerical order by catalog number. It should contain all the information that is listed on the tag as well as any additional remarks from the collector or preparer. The following format is a good example for a catalog entry:

Cat #	<i>Sci. name</i>	m/f	Age	Location Collected	Date Collected	Collected by	Date Prepared	Prepared By	Additional remarks
967	<u><i>Scientificus namus</i></u>	M	2 yrs	123 N Main St, NY, NY 00012	15-March-2001	M. Myers	20-April-2001	P. Mitchell	Specimen was found dead on side of road

It is good practice to start your catalog numbers at number 1. Always record as much information as possible. Regarding entering names, a first initial and full last name are the preferred method. Dates should be in a format as above, with the date listed first, followed by the month, and the four-digit year. This is especially important since a year of 08 could either be 2008, or 1908. To avoid confusion, always use a four-digit year. Additional remarks can include anything that may be pertinent to the specimen.

2. Digital Copy Catalog

The University of Central Oklahoma uses a database program called Specify for its digital copy of the information. While each program may have slightly different options for data entry, the basic format will be similar. The following steps assume that a taxonomic tree has already been loaded into the program. If taxonomic data is not already loaded, please consult the manual for the program.

First, supply the catalog number to be assigned to the entry. Then provide, in no particular order, the scientific name for the specimen, location (Specify has entries for continent, country, state, and county), collected by, prepared by, collected date, age, and sex. There is also a field for additional remarks which should include the date at which the specimen is prepared and any other additional remarks that were placed in the catalog.

Be sure that all info that is supplied on the tag is properly entered into the database. After all information has been recorded, be sure to save your entries. If your database has the ability, you can export it into an Excel® worksheet or other format so that there is more than one digital copy but this is not necessary since you will also have a hard copy of the information.

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SOP # 5 Museum Quality Control

Work in a museum is never done. Once the specimen has been prepared, and the data has been properly recorded, it is time to engage in museum quality control. The purpose of museum quality control involves three things; to assure that all specimens are properly entered into the database, properly accounted for, and safe and remain in good condition in the museum.

1. All specimens properly entered into the catalog

This set of steps should be used to determine that the collection objects in the museum are properly entered into the database.

The first thing that should be done is to have a report printed that displays all the information that was entered into the database. The report should include all the information that has been entered into the database (i.e. catalog number, date collected, collector, location, preparer, etc). This report will be used to verify the information on the specimen's tag.

After the report has been printed, place the report in a three-ringed binder with extra notebook paper behind it. On the notebook paper, draw a chart similar to the following one:

Cat. #	Specimen Name	Incorrect Information?

Walk through the museum, and check the tag of each specimen against the report. If the data on the tag matches the printed report, then place a check mark on the report to indicate that it has been checked.

If a tag is found that does not match the report, then record catalog number, taxonomy name, and the information on the tag that did not match the report on the chart. Again, place a check mark on the printed report to indicate that it has been checked. Once the specimen tags have been checked, proceed to update the incorrect information in the database, and place a check mark by each updated line on the chart to indicate that it has been corrected in the database.

Once this process is complete, the information in the database will be accurate and complete.

2. All specimens properly accounted for

After walking through the museum, the printed database report should have a check mark beside each specimen, indicating that it was checked and the data was verified. If there are any specimens on the printed report that were not checked, verify with all personnel in the museum. Make sure that there are not any specimens that have been checked out by instructors or students. If there are specimens that have been checked out, verify the date in which they are to be returned.

If the museum frequently checks out specimens, create a log book that shows which specimens have been loaned out and list them under the person to whom they were loaned. If available, be sure to include the day and time that the specimens will be returned.

3. All specimens safe and in good condition

Obviously a lot of time was spent in collecting and preparing the specimen for the museum. The data for the specimen was also entered into the museum's records. Because of the time spent for each individual specimen, it is important that the specimens are in a safe and secure location. Not only does there need to be safeguards against theft, but there also is a necessity to protect the specimen from other unforeseen tragedies.

It is wise to have the specimens in a cabinet that can be locked with a key. The environment must also be one that does not attract such insects that feed on dead flesh and bone. This is why it is important to check the specimens periodically to assure that they are not being devoured by such insects. **At least once per month**, the museum should be walked through, inspecting each drawer and cabinet to make sure that all specimens appear normal. If specimens are encountered that appear to be compromised, isolate them immediately from the other specimens to determine if they can be salvaged. More often than not, a specimen that may have been compromised can still be used for other learning purposes. However be sure that the problem is remedied before returning it to the collection.

It may be necessary to split up the quality control walk. Assign different personnel to each section of the museum to help lighten the workload. If it is necessary to split the walk up into multiple sessions, be sure to place some sort of marker on the last checked location. Complete the walk in as few days as possible to maximize efficiency.

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